

# **WILLETTON SENIOR HIGH SCHOOL**



## **COMPUTER SCIENCE EXTENSION PROSPECTUS**

**Year 8 - 10 in 2025 - 2027**

# THREE YEAR COMPUTER SCIENCE EXTENSION PROGRAM



The aim of the Computer Science (Extension) program is to develop and extend students' skills in computer programming and computing science.

The program has successfully operated at Willetton Senior High School for many years and entry is highly competitive. Many of the graduates of this program continue on to tertiary study and careers in the computing area as well as a range of careers which require high level computing skills. Some have supported their tertiary studies by working part-time in the computing field, utilising skills gained by their participation in the program.

## The Specialised Computer Science Program

Willetton Senior High School will award places in the three-year, Extension Computer Science Program to 25 students at Year 8 level in 2025. It is expected that students will maintain a sound academic performance and actively participate in all class activities. They are also expected to conform to the school's assessment and behaviour management policy. An annual fee is charged. The program occupies two hours of formal tuition per week in each semester plus extra-curricular after school activities and excursions, providing a superset of the mandatory SCSA Digital Technologies Curriculum required for all Year 8s. Specialist computing staff will teach and mentor the students.

## Elements or themes of the Computer Science Specialist (8-10) program include:

- **Become a Coding Ninja:** be able to code demonstrating correct, professional programming principles
- **Real World Solutions:** implement algorithms common in everyday use on the internet
- **5Cs of 21C:** Communication, Collaboration, Creativity, Critical thinking + Curiosity
- **Shine your own light:** participate in external competitions – prepare to be judged!
- **Be your own Boss:** project management basics, basic business/budget principles
- **Taste the Goodness:** explore breadth of CompSci-data science, visualization, AI, ML etc.
- **Inclusivity:** incursions from inclusivity specialists eg. ACS Women in Technology (WiT), Girls Programming Network (GPN), Web design UI/UX inclusivity specialists
- **Own IT! Be a superhero:** What the world needs next - don't fear to fail! (See <https://www.acs.org.au/superhero.html>)
- **Expert in Residence (EiR) program**
- **Excursions to Computing sites of significance:** eg. Curtin's HIVE Visualisation Centre, Pawsey Super Computer Centre and others

In Year 8, students are introduced to each of the program elements. The focus on coding extends to using professional tools to develop real world programs around fundamental coding principles.

In Year 9, students are extended in each of the program elements, introducing data communications concepts and involving more external resources. The focus on coding remains and includes using professional tools to develop for iOS/mobile devices (iPhones, iPads, Apple Watch etc) whilst also gaining an understanding of the breadth of the field of Computer Science and the *workstyle* of those who make careers in the IT industry.

In Year 10, the course builds upon the basic elements from Years 8 and 9 including advanced understandings of computer networking and security. All the theoretical and practical skills gained to this point provide a springboard for each student's *personal project*. The time involved in these activities will involve significant co-curricular work. Initially, students will work individually to select a *personal project*. This project will create a fully documented and operational information solution that mimics or addresses a real-world community issue/service/business suitable for presentation and demonstration in an *exposition* environment featuring parents and industry/tertiary representatives. Then, if time permits, students will work together in small groups (possibly with an industry mentor) to develop a team solution to a significant external requirement.

During each year of the course, students will be exposed to an *Experts in Residence* program, where Computer Industry specialists will come into the school to work with students. There is, also an excursion program, where students visit local sites of significance in the IT industry. One class per week is scheduled in Session 5 so that these activities can extend after normal school hours to provide the time required to maximise learning opportunities that are only available to program participants.





## Selection Criteria

To be considered, a student must;

- already be enrolled at WSHS in Year 7 this year, or otherwise qualify for enrolment in Year 8 at WSHS by the beginning of 2025. (No cross-boundary admissions will be accepted unless an already enrolled GATE student).
- have a good academic record, particularly in the field of mathematical reasoning
- demonstrate commitment and capability in the field of Computer Science (for example, through performance in Year 7 Digital Technologies and/or participation in home/community coding activities).

## Selection Process

The initial stage of the selection process consists of two standardised aptitude tests of computer, mathematical and reasoning skills and abilities. Subsequent to the "Round One" aptitude testing, a group will be invited to progress to "Round Two". This will involve a computer-based activity to be undertaken at home during the semester holiday break. "Round Three" involves internal review of student academic histories (including primary school where available) and interviews with selected teachers and their year co-ordinator). On completion of the selection process candidates will be ranked and the top 25 students will be offered a position. This announcement usually takes place by early Term 3.

### Applications close: Friday 21 June 2024

Aptitude Testing: Monday 24 June 2024  
7.15 am – 9:30 am  
in the  
School Lecture Theatre  
Willetton Senior High School

All students must attend with a fully charged device running a web browser as all test materials are online.

For further information please contact:

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